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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,726	08/21/2003	Shuichi Nakanishi	8020-1032	6193

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EXAMINER

AMADIZ, RODNEY

ART UNIT	PAPER NUMBER
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2629

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/644,726	NAKANISHI, SHUICHI	
	Examiner	Art Unit	
	Rodney Amadiz	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-18 and 24-28 is/are allowed.
- 6) ☒ Claim(s) 1,6-8 and 19 is/are rejected.
- 7) ☒ Claim(s) 2-5 and 20-23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/17/03 & 2/16/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

2. Claim 2, 4, 20 and 22 are objected to because of the following informalities:

Claim 2, Pg. 65, Line 47, change "dsid" to "said".

Claim 20, Pg. 74, Line 48, change "dsid" to "said".

Claims 4 and 22-end both with a period.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 7 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsui et al. (U.S. Patent 6,281,949).

As to claims 1 and 19, Matsui et al. teaches A video display device comprising: a red color light source to emit red color light (Fig. 13, Reference Number 12R); a green color light source to emit green color light (Fig. 13, Reference Number 12G); a blue

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color light source to emit blue color light (Fig. 13, Reference Number 12B); at least one spatial light modulator to spatially modulate, according to a video signal for a red color, a video signal for a green color, and a video signal for a blue color (Fig. 13, Spatial Modulators 60R, 60G and 60B), said light fed from said red color light source, said light fed from said green color light source, and said light fed from said blue color light source (Fig. 13, See Red light source 12R, Green light source 12G and Blue light source 12B fed into SLM 60R, 60G and 60B); a selection controller to select a combination of a video signal for controlling said spatial light modulator and said light to be modulated (Fig. 13, Selection Controller 62); and a light quantity controller (Fig. 13, Light Quantity Controllers 34R, 34G and 34B) to control a time mean value of luminous flux of light to be modulated by said spatial light modulator.

As to claim 7, Matsui et al. teaches a light source for said red color light, said green color light and said blue color light comprising a light emitting diode (See Fig. 13, Red LED 12R, Green LED 12G and Blue LED 12B).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui et al. in view of Walker et al. (USPGPUB 2002/0021267).

As to claim 6, Matsui et al. does not teach a period during which all light sources for each color are turned OFF during one frame period. Examiner cites Walker et al. to teach the light sources turned off during one frame period (Pg. 9, ¶ 103). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate an off period in which all the light sources are turned off as taught by Walker et al. in the SLM display taught by Matsui et al. so that the display DC balance of the pixels could be restored (Walker et al. Pg. 9, ¶ 103).

As to claim 8, Matsui et al. does not teach said light source for said red color light, said green color light and said blue color light comprising a plurality of said light emitting diodes. Examiner cites, Walker et al. to teach a plurality of light emitting diodes used as light sources (Pg. 3, ¶ 43). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate a plurality of light emitting diodes as taught by Walker et al. in the SLM display taught by Matsui et al. so that a fail-safe system is achieved that extends the life of the display.

Allowable Subject Matter

7. Claims 2-5 and 20-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 2 and 20, none of the prior art teaches or suggests the applicant's claimed invention, "said following equations comprising:

$$xr0=(xr.times.Lrr/yr+xg.times.Lrg/yg+xb.times.Lrb/yb)/(Lrr/yr+Lrg/yg+Lrb/-yb)$$

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$$y_{r0} = (L_{rr} + L_{rg} + L_{rb}) / (L_{rr}/y_r + L_{rg}/y_g + L_{rb}/y_b)$$

$$x_{g0} = (x_r \cdot \text{times} \cdot L_{gr}/y_r + x_g \cdot \text{times} \cdot L_{gg}/y_g + x_b \cdot \text{times} \cdot L_{gb}/y_b) / (L_{gr}/y_r + L_{gg}/y_g + L_{gb}/y_b)$$

$$y_{g0} = (L_{gr} + L_{gg} + L_{gb}) / (L_{gr}/y_r + L_{gg}/y_g + L_{gb}/y_b)$$

$$x_{b0} = (x_r \cdot \text{times} \cdot L_{br}/y_r + x_g \cdot \text{times} \cdot L_{bg}/y_g + x_b \cdot \text{times} \cdot L_{bb}/y_b) / (L_{br}/y_r + L_{bg}/y_g + L_{bb}/y_b)$$

$$y_{b0} = (L_{br} + L_{bg} + L_{bb}) / (L_{br}/y_r + L_{bg}/y_g + L_{bb}/y_b)$$
 wherein: said L_{rr} represents a time mean value of luminous flux of red color light to be modulated according to a video signal for a red color, said L_{gr} represents a time mean value of luminous flux of red color light to be modulated according to a video signal for a green color, said L_{br} represents a time mean value of luminous flux of red color light to be modulated according to a video signal for a blue color, said L_{rg} represents a time mean value of luminous flux of green color light to be modulated according to a video signal for a red color, said L_{gg} represents a time mean value of luminous flux of green color light to be modulated according to a video signal for a green color, said L_{bg} represents a time mean value of luminous flux of green color light to be modulated according to a video signal for a blue color, said L_{rb} represents a time mean value of luminous flux of blue color light to be modulated according to a video signal for a red color, said L_{gb} represents a time mean value of luminous flux of blue color light to be modulated according to a video signal for a green color, said L_{bb} represents a time mean value of luminous flux of blue color light to be modulated according to a video signal for a blue color, said (x_r, y_r) , said (x_g, y_g) , and said (x_b, y_b) represent chromaticity coordinates of said red color light, said green color light, and said blue color light, respectively, according to said standard calorimetric system."

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As to claims 4 and 22, none of the prior art teaches or suggests the applicant's claimed invention, "a video signal is defined as:

$$xw = (xr1 \cdot \text{times} \cdot Lr/yr1 + xg1 \cdot \text{times} \cdot Lg/yg1 + xb1 \cdot \text{times} \cdot Lb/yb1) / (Lr/yr1 + Lg/yg1 + Lb/yb1)$$

$$yw = (Lr + Lg + Lb) / (Lr/yr1 + Lg/yg1 + Lb/yb1) \text{ wherein: said } Lrr \text{ represents a time mean value}$$

of luminous flux of red color light to be modulated according to a video signal for a red

color, said Lgr represents a time mean value of luminous flux of red color light to be

modulated according to a video signal for a green color, said Lbr represents a time

mean value of luminous flux of red color light to be modulated according to a video

signal for a blue color, said Lrg represents a time mean value of luminous flux of green

color light to be modulated according to a video signal for a red color, said Lgg

represents a time mean value of luminous flux of green color light to be modulated

according to a video signal for a green color, said Lbg represents a time mean value of

luminous flux of green color light to be modulated according to a video signal for a blue

color, said Lrb represents a time mean value of luminous flux of blue color light to be

modulated according to a video signal for a red color, said Lgb represents a time mean

value of luminous flux of blue color light to be modulated according to a video signal for

a green color, said Lbb represents a time mean value of luminous flux of blue color light

to be modulated according to a video signal for a blue color, and wherein: said Lr is

defined to be $Lrr + Lrg + Lrb$, said Lg is defined to be $Lgr + Lgg + Lgb$, said Lb is defined to

be $Lbr + Lbg + Lbb$, said $xr1$ is defined to be

$(xr \cdot \text{times} \cdot Lrr/yr + xg \cdot \text{times} \cdot Lrg/yg + xb \cdot \text{times} \cdot Lrb/yb) / (Lrr/yr + Lrg/yg + Lrb/yb)$, said $yr1$ is

defined to be $(Lrr + Lrg + Lrb) / (Lrr/yr + Lrg/yg + Lrb/yb)$ said $xg1$ is defined to be

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$(x_r \cdot \text{times} \cdot L_{gr}/y_r + x_g \cdot \text{times} \cdot L_{gg}/y_g + x_b \cdot \text{times} \cdot L_{gb}/y_b) / (L_{gr}/y_r + L_{gg}/y_g + L_{gb}/y_b)$ said y_{g1} is defined to be $(L_{gr} + L_{gg} + L_{gb}) / (L_{gr}/y_r + L_{gg}/y_g + L_{gb}/y_b)$ said x_{b1} is defined to be $(x_r \cdot \text{times} \cdot L_{br}/y_r + x_g \cdot \text{times} \cdot L_{bg}/y_g + x_b \cdot \text{times} \cdot L_{bb}/y_b) / (L_{br}/y_r + L_{bg}/y_g + L_{bb}/y_b)$ and said y_{b1} is defined to be $(L_{br} + L_{bg} + L_{bb}) / (L_{br}/y_r + L_{bg}/y_g + L_{bb}/y_b)$.

As to claims 5 and 23, none of the prior art teaches or suggests the applicant's claimed invention, "wherein following expressions hold: $P_{rr}=P_{gr}=P_{br}$ $P_{rg}=P_{gg}=P_{bg}$ $P_{rb}=P_{gb}=P_{bb}$ Wherein: Said P_{rr} , said P_{gr} , and said P_{br} represent luminous flux of red color light to be modulated according to a video signal for a red color, a video signal for a green color, and a video signal for a blue color, respectively, Said P_{rg} , said P_{gg} , and said P_{bg} represent luminous flux of green color light to be modulated according to a video signal for a red color, a video signal for a green color, and a video signal for a blue color, respectively, and Said P_{rb} , said P_{gb} , and said P_{bb} represent luminous flux of blue color light to be modulated according to a video signal for a red color, a video signal for a green color, and a video signal for a blue color, respectively."

8. Claims 9-18 and 24-28 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter:

As to claims 9 and 24, none of the prior art teaches or suggests the applicant's claimed invention, "wherein said light applying means is controlled so that, when

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luminous flux of said red color light being emitted while said spatial light modulating means is driven according to a video signal for a red color is expressed as P_r , when luminous flux of said green color light being emitted while said spatial light modulating means is driven according to a video signal for a green color is expressed as P_g , and when luminous flux of said blue color light being emitted while said spatial light modulating means is driven according to a video signal for a blue color is expressed as P_b , both said green color light having luminous flux of $K \times P_g$ (k being a coefficient and $0 < k < 1$ same as above) and said blue color light having luminous flux of $K \times P_b$ together with said red color light are applied when said spatial light modulating means is driven according to said video signal for a red color, both said blue color light having luminous flux of $K \times P_b$ and said red color light having luminous flux of $K \times P_r$ together with said green color light are applied when said spatial light modulating means is driven according to said video signal for a green color and both said red color light having luminous flux of $K \times P_r$, and said green color light having luminous flux of $K \times P_g$ together with said blue color light are applied when said spatial light modulating means is driven according to said video signal for a blue color."

As to claims 13 and 26, none of the prior art teaches or suggests the applicant's claimed invention, "said light applying means is controlled so that red color light and white color light are applied to said spatial light modulating means while said spatial light modulating means is driven according to a video signal for a red color, a green color light and a white color light are applied to said spatial light modulating means while

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said spatial light modulating means is driven according to a video signal for a green color, and a blue color light and a white color light are applied to said spatial light modulating means while said spatial light modulating means is driven according to a video signal for a blue color."

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Examiner cites the following references as pertinent to the disclosure due to their relevance with this application.

Morgan et al.	U.S. Patent 6,453,067
Noda et al.	U.S. Patent 6,568,811
Huibers et al.	U.S. Patent 6,726,333
Harold	U.S. Patent 6,831,624
Yoshinaga et al.	U.S. Patent 6,961,038
Pettitt	USPGPUB 2002/0041708
Edlinger et al.	USPGPUB 2003/0156330
Akiyama	USPGPUB 2003/0214725

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney Amadiz whose telephone number is (571) 272-7762. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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